BANG & OLUFSEN
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CABLE ADDRESS BANGOLUF

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Bang&Olufsen

Beomaster 1700

Type 1701

22 FEB 1980

SERVICE MANUAL

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MEASURING CONDITIONS

All voltages are measured relative to ground with voltmeter(inner resistance 10 Mohms).
Voltages are measured without signal in posotion FM.
Signal paths are shown for AM (position LW), FM, and for AF right channel.
Mechanical switches are shown in neutral position.

CO-ORDINATE NUMBERS
The biggest PC boards are provided woth co-ordinate system. The components on these PC boards are provided with a co-ordinate number on the diagram (smaller printing type than the position numbers) indicating in which co-ordinate they are placed on the PC board.

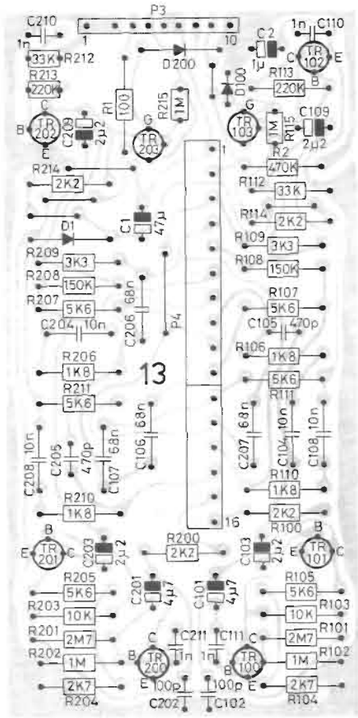
Symbol for safety resistors

When replacing components with this symbol use the same type and the same values for ohms and watts. The new components is to be mounted in the same way as the replaced.

PC Boards

PC Drawings are seen from copperfoil side

Tone Control, 8002374, PC13



Power Supply, 8002387, PC22

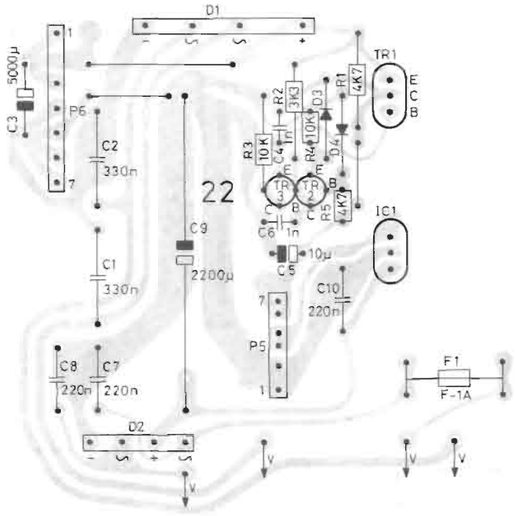


DIAGRAM 1

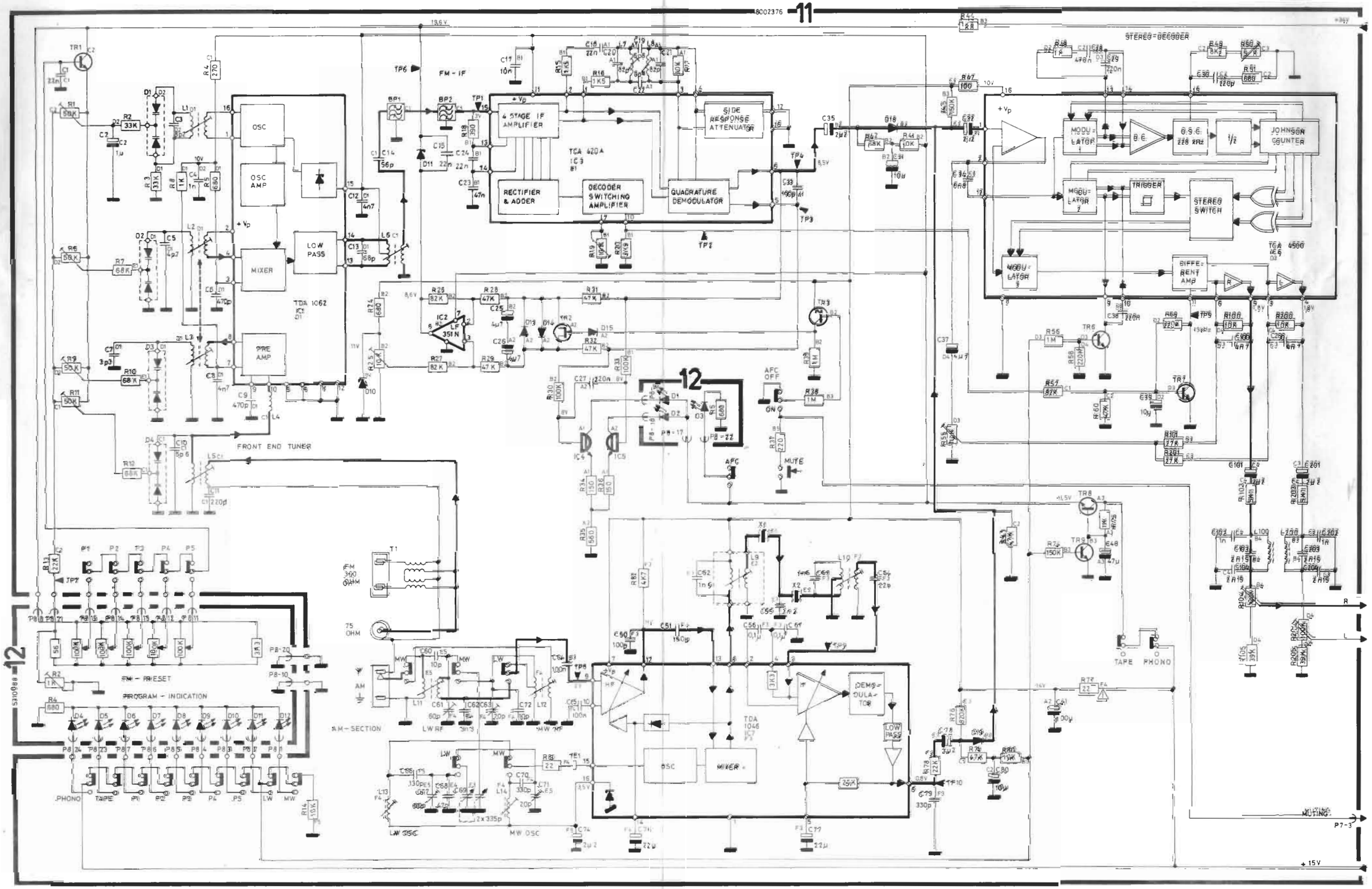
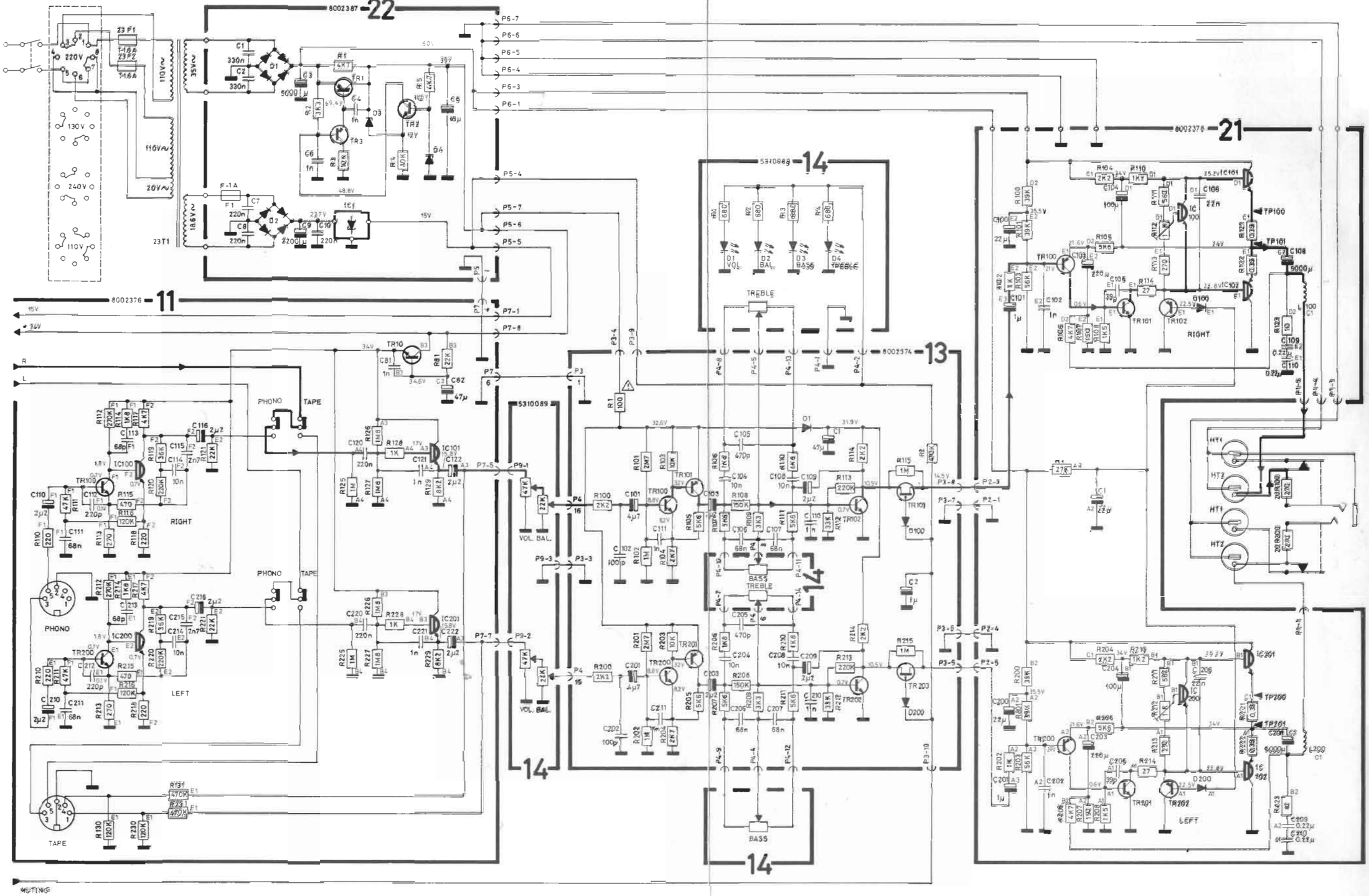

8002376
11
12
13,6 V
TR1
OSC
OSC AMP
MIXER
LOW PASS
PRE AMP
TDA 1062
FRONT END TUNER
FM - IF
4 STAGE IF AMPLIFIER
TCA 420A
SIDE RESPONSE ATTENUATOR
RECTIFIER & ADDER
DECODER SWITCHING AMPLIFIER
QUADRATURE DEMODULATOR
STEREO-DECODER
MODU-LATOR
B.E.
6.5.6. 228 kHz
1/2
JOHNSON COUNTER
TRIGGER
STEREO SWITCH
TEA 4500
DIFFE-RENT AMP
AFC OFF
AFC
MUTE
TR3
TR6
TR7
TR8
TR9
TAPE
PHONO
FM 300 OHM
75 OHM
AM
AM-SECTION
LW RF
MW RF
LW OSC
MW OSC
TDA 1046
OSC
MIXER
LOW PASS
DEMO-DULA-TOR
FM - PRESET
PROGRAM - INDICATION
PHONO
TAPE
P1
P2
P3
P4
P5
LW
MW
MUTING
P7-3
+15V
S310068

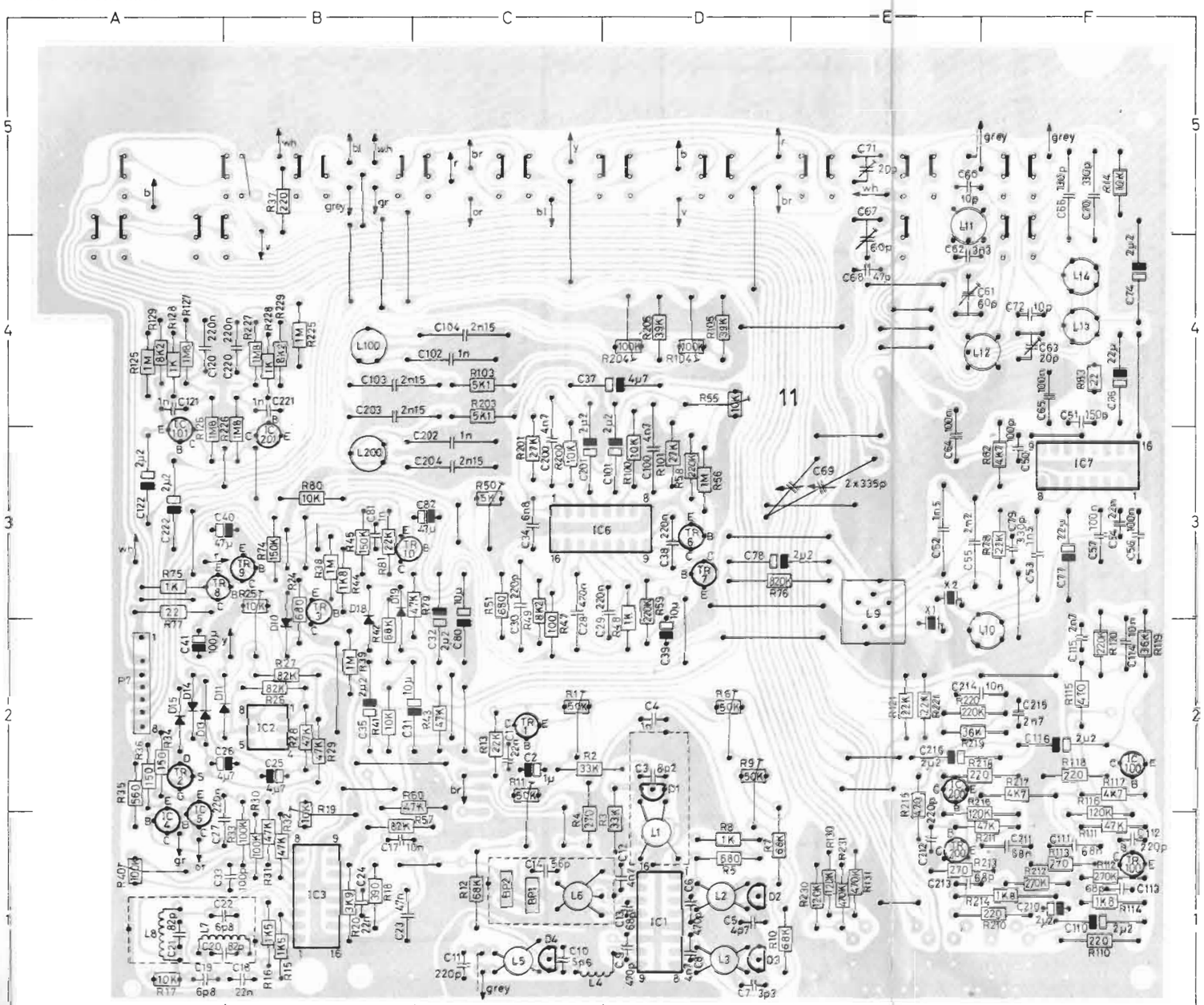
DIAGRAM 2


8002387 22
8002376 11
5310089 14
8002374 13
8002378 21
P6-7
P6-6
P6-5
P6-4
P6-3
P6-1
P5-4
P5-7
P5-6
P5-5
P7-1
P7-8
P7-5
P9-1
P9-3
P3-3
P9-2
P7-7
P4
P3-4
P3-9
P4-8
P4-5
P4-12
P4-1
P4-2
P3
P5
P7
23 F1
T 1.6 A
23 F2
T 1.6 A
220V
110V
130 V
240 V
110 V
23T1
35V~
18.6V~
110V~
20V~
F-1A
C1
330n
C2
330n
D1
R1
4K7
TR1
TR2
TR3
R2
3K3
R3
10K
R4
10K
R5
4K7
C3
5000µ
C4
1n
C5
C6
1n
D3
D4
48.8V
38V
42V
15V
C7
220n
C8
220n
D2
C9
2200µ
C10
220n
16f
23.7V
TR10
R81
22K
C81
1n
C82
47µ
34.6V
PHONO
TAPE
R
L
R112
220K
R114
1K8
R117
4K7
C113
68p
C116
2µ2
C115
2n7
R119
36K
R121
22K
C114
10n
R120
220K
IC100
TR100
C112
220p
R115
470
R116
120K
C110
2µ2
R111
47K
R110
220
C111
68n
R113
270
R118
220
RIGHT
R212
220K
R214
1K8
R217
4K7
C213
68p
C216
2µ2
C215
2n7
R219
36K
R221
22K
C214
10n
R220
220K
IC200
TR200
C212
220p
R215
470
R216
120K
C210
2µ2
R210
220
R211
47K
C211
68n
R213
270
R218
220
LEFT
R131
470K
R231
470K
R130
120K
R230
120K
C120
220n
R126
1K8
R128
1K
C121
1n
C122
2µ2
R125
1M
R127
1K8
R129
8K2
IC101
IC201
C220
220n
R226
1K8
R228
1K
C221
1n
C222
2µ2
R225
1M
R227
1K8
R229
8K2
47K
22K
VOL. BAL.
R1
100
R100
2K2
C101
4µ7
C102
100p
R102
1M
R104
2K7
R101
2M7
R103
10K
TR101
R105
5K6
R106
1K8
C104
10n
C105
47p
C108
10n
C109
2µ2
R110
1K8
R113
220K
R108
150K
C103
2µ2
R107
3K3
R109
3K3
C106
68n
C107
68n
R111
5K6
R112
33K
TR102
R115
1M
R116
470K
TR103
D100
C1
47µ
31.9V
32.6V
C2
1µ
BASS
TREBLE
R200
2K2
C201
4µ7
C202
100p
R202
1M
R204
2K7
R201
2M7
R203
10K
TR201
R205
5K6
R206
1K8
C204
10n
C205
470p
C208
10n
C209
2µ2
R210
1K8
R213
220K
R208
150K
C203
2µ2
R207
5K6
R209
3K3
R211
5K6
C206
68n
C207
68n
R212
33K
TR202
R215
1M
TR 203
D200
R1
27K
C1
22µ
HT1
HT3
HT1
HT2
20 R200
270
R204
2K2
C204
100µ
R219
1K2
C1
25.2V
IC201
R200
39K
C200
22µ
R201
39K
R202
1K
C201
1µ
C202
1n
R217
560
R218
1K
IC 200
TP200
R221
0.39
TP201
C208
5000µ
L200
C1
R223
10
C209
0.22µ
C210
0.22µ
R216
4K7
R207
150
R208
1K5
TR201
TR202
D200
R204
2K2
R219
1K2
C204
100µ
R200
39K
C200
22µ
R201
39K
R202
1K
C201
1µ
C202
1n
R217
560
R218
1K
IC 200
TP200
R221
0.39
TP201
C208
5000µ
L200
C1
R223
10
C209
0.22µ
C210
0.22µ
R216
4K7
R207
150
R208
1K5
TR201
TR202
D200
C1
C104
100µ
R100
39K
C100
22µ
R101
39K
R102
1K
C101
1µ
C102
1n
R103
56K
TR100
R105
5K6
C103
220µ
R104
1K
C105
39p
R114
27
TR101
TR102
R111
560
R112
1K
IC 100
C106
22n
TP100
TP101
R121
0.39
R122
0.39
C108
5000µ
R123
10
C109
0.22µ
C110
0.22µ
R113
270
R114
27
G100
RIGHT
R464
2K2
R116
1K2
C104
100µ
R100
39K
C100
22µ
R101
39K
R102
1K
C101
1µ
C102
1n
R103
56K
TR100
R105
5K6
C103
220µ
R104
1K
C105
39p
R114
27
TR101
TR102
R111
560
R112
1K
IC 100
C106
22n
TP100
TP101
R121
0.39
R122
0.39
C108
5000µ
R123
10
C109
0.22µ
C110
0.22µ
R113
270
R114
27
G100
RIGHT
HT1
HT3
HT1
HT2
20 R200
270
C1
C2
1µ
R215
1M
TR 203
D200
R200
39K
C200
22µ
R201
39K
R202
1K
C201
1µ
C202
1n
R217
560
R218
1K
IC 200
TP200
R221
0.39
TP201
C208
5000µ
L200
C1
R223
10
C209
0.22µ
C210
0.22µ
R216
4K7
R207
150
R208
1K5
TR201
TR202
D200
LEFT
P1-6
P1-4
P1-3
P1-1
P1-7
P4-3
P4-11
P4-14
P4-7
P4-14
P4-6
P4-9
P4-4
P4-12
P3-10
P3-8
P3-7
P2-3
P2-1
P3-6
P2-4
P3-5
P2-5
BASS
TREBLE
BASS
14
14
14
MUTING

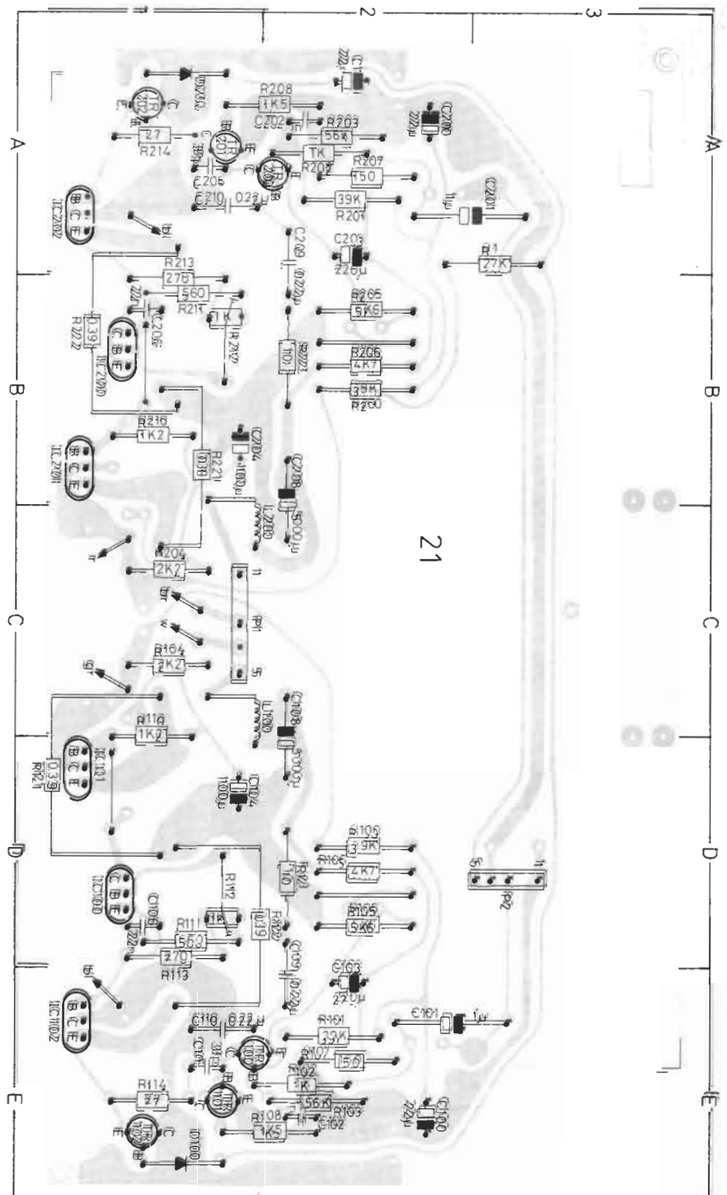
PC Drawings are seen from copperfoil side

Ledningsfarver	b	black	schwartz	sort	noir
	bl	blue	blau	blå	bleu
Colour of wires	br	brown	braun	brun	brun
	gr	green	grün	grøn	vert
Kabelfarben	grey	grey	grau	grå	gris
	or	orange	orange	orange	orange
Coleurs des files	r	red	rot	rød	rouge
	v	violet	violett	violet	violet
	wh	white	weiss	hvid	blanc
	y	yellow	gelb	gul	gaune

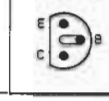
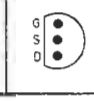
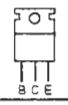
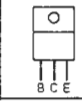
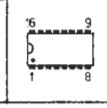
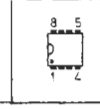
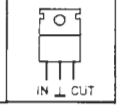
FM, AM, 8002376, PC11



Output Ampl., 8002378, PC21

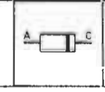
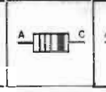
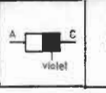
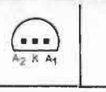


LIST OF TRANSISTORS AND IC's

19	20	24	31	35	101	103	105
							

11TR1	8320377	**20**	BC 547 C
11TR2	8320396	**24**	2N 5639
		24	MF 4392
11TR3	8320152	**20**	BC 557B
11TR6	8320097	**20**	BC 547B
11TR7			
11TR8	8320295	**20**	BC 337-25/18
11TR9	8320097	**20**	BC 547B
11TR10			
11TR100/200	8320344	**20**	BC 550B
11IC1	8340198	**101**	TDA 1062
11IC2	8340168	**103**	LF 351N
11IC3	8340033	**101**	TCA 420A
11IC4	8340054	**19**	MPS A13
11IC5		**19**	TPS A13
11IC6	8340134	**101**	TCA 4500A
11IC7	8340196	**101**	TDA 1046
11IC 100/200	8340054	**19**	MPS A13
11IC 101/201		**19**	TPS A13
13TR 100/200	8320095	**20**	BC 549B
13TR 101/201	8320069	**20**	BC 559B
13TR 102/202	8320095	**20**	BC 549B
13TR 103/203	8320396	**24**	2N 5639
		24	MPF 4392
21TR 100/200	8320242	**20**	BC 556B
21TR 101/201	8320323	**19**	MPS A05
21TR 102/202	8320324	**19**	MPS A55
21IC 100/200	8340054	**19**	MPS A13
		19	TPS A13
21IC 101/201	8340117	**31**	BDX 33A
		35	TEO 1088
		35	FJ 3001
21IC 102/202	8340118	**31**	BDX 34A
		35	TEO 1089
		35	FJ 2501
22TR1	8320438	**31**	BD 536
22TR2	8320323	**19**	MPS A05
22TR3	8320324	**19**	MPS A55
22IC1	8340064	**105**	LM 340T-15
		105	7815 CU
		105	uA 7815VC
		105	MC 7815CT
		105	uA 7815CKC

LIST OF DIODES

203	209	215	217	222			
							

11D1	8300308	**222**	BB204
11D2			
11D3			
11D4			
11D10	8340189	**209**	ZTK 11
11D11			
11D13	8300058	**217**	SFD 184
11D14		**215**	1N 4148
11D15		**209**	1N 4148-TB
11D18			
11D19			
12D1	8330023	**203**	LED
12D2			
12D3			
12D4			
12D5			
12D6	8330024	**203**	Slide with LED
12D7			
12D8			
12D9			
12D10			
12D11			
12D12			
13D 100/200	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148-TB
14D1	8330024	**203**	Slide with LED
14D2			
14D3			
14D4			
21D 100/200	8300058	**217**	SFD 184
		215	1N 4148
		209	1N 4148-TB
22D1	8300297		B80-C3700/2200
22D2	8300393		B80-C1500/1000
22D3	8300033	**209**	ZPD 22V 5%
		209	BZX 79C22VO
		209	BZX 83C22VO
22D4	8300029	**209**	ZDP 12V 5%
		209	BZX 79C12VO
		209	BZX 83C12VO

LIST OF ELECTRICAL PARTS
FM, AM, 8002376, PC11

R1	5370225	50 kohms ±10% 0.1W		R49	5010154	8.2 kohms ±5% 1/8W	
R2	5010075	33 kohms ±5% 1/8W		R50	5370058	5 kohms ±20% 0.1W	
R3	5010075	33 kohms ±5% 1/8W		R51	5010144	680 ohms ±5% 1/8W	
R4	5010000	270 ohms ±5% 1/8W		R55	5370074	10 kohms ±20% 0.1W	
R5	5010144	680 ohms ±5% 1/8W		R56	5010054	1 Mohm ±5% 1/8W	
R6	5370225	50 kohms ±10% 0.1W		R57	5010091	82 kohms ±5% 1/8W	
R7	5010062	68 kohms ±5% 1/8W		R58	5010120	220 kohms ±5% 1/8W	
R8	5010040	1 kohm ±5% 1/8W		R59	5010120	220 kohms ±5% 1/8W	
R9	5370225	50 kohms ±10% 0.1W		R60	5010045	47 kohms ±5% 1/8W	
R10	5010062	68 kohms ±5% 1/8W		R74	5010063	150 kohms ±5% 1/8W	
R11	5370225	50 kohms ±10% 0.1W		R75	5010040	1 kohm ±5% 1/8W	
R12	5010062	68 kohms ±5% 1/8W		R76	5010505	820 kohms ±5% 1/8W	
R13	5010079	22 kohms ±5% 1/8W		R77	5010448	22 ohms ±5% 1/8W	
R14	5010059	10 kohms ±5% 1/8W		R78	5010079	22 kohms ±5% 1/8W	
R15	5010247	1.5 kohms ±5% 1/8W		R79	5010045	47 kohms ±5% 1/8W	
R16	5010247	1.5 kohms ±5% 1/8W		R80	5010059	10 kohms ±5% 1/8W	
R17	5010059	10 kohms ±5% 1/8W		R81	5010079	22 kohms ±5% 1/8W	
R18	5010070	390 ohms ±5% 1/8W		R82	5010048	4.7 kohms ±5% 1/8W	
R19	5370074	10 kohms ±20% 0.1W		R83	5010448	22 ohms ±5% 1/8W	
R20	5010069	3.9 kohms ±5% 1/8W		R100	5010059	10 kohms ±5% 1/8W	
R24	5010144	680 ohms ±5% 1/8W		R101	5010141	27 kohms ±5% 1/8W	
R25	5370074	10 kohms ±20% 0.1W		R103	5010733	5.1 kohms ±5% 1/8W	
R26	5010091	82 kohms ±5% 1/8W		R104	5370128	100 kohms ±20% 0.1W	
R27	5010091	82 kohms ±5% 1/8W		R105	5010060	39 kohms ±5% 1/8W	
R28	5010045	47 kohms ±5% 1/8W		R110	5010092	220 ohms ±5% 1/8W	
R29	5010045	47 kohms ±5% 1/8W		R111	5010045	47 kohms ±5% 1/8W	
R30	5010049	100 kohms ±5% 1/8W		R112	5010083	270 kohms ±5% 1/8W	
R31	5010045	47 kohms ±5% 1/8W		R113	5010000	270 ohms ±5% 1/8W	
R32	5010045	47 kohms ±5% 1/8W		R114	5010066	1.8 kohms ±5% 1/8W	
R33	5010049	100 kohms ±5% 1/8W		R115	5010058	470 ohms ±5% 1/8W	
R34	5010057	150 ohms ±5% 1/8W		R116	5010047	120 kohms ±5% 1/8W	
R35	5010067	560 ohms ±5% 1/8W		R117	5010048	4.7 kohms ±5% 1/8W	
R36	5010057	150 ohms ±5% 1/8W		R118	5010092	220 ohms ±5% 1/8W	
R37	5010092	220 ohms ±5% 1/8W		R119	5020019	36 kohms ±2% 1/8W	
R38	5010054	1 Mohm ±5% 1/8W		R120	5010120	220 kohms ±5% 1/8W	
R39	5010054	1 Mohm ±5% 1/8W		R121	5010079	22 kohms ±5% 1/8W	
R41	5010059	10 kohms ±5% 1/8W		R125	5010054	1 Mohm ±5% 1/8W	
R42	5010062	68 kohms ±5% 1/8W		R126	5010791	1.8 Mohms ±10% 1/8W	
R43	5010045	47 kohms ±5% 1/8W		R127	5010791	1.8 Mohms ±10% 1/8W	
R44	5010066	1.8 kohms ±5% 1/8W		R128	5010040	1 kohm ±5% 1/8W	
R45	5010063	150 kohms ±5% 1/8W		R129	5010154	8.2 kohms ±5% 1/8W	
R47	5010065	100 ohms ±5% 1/8W		R130	5010047	120 kohms ±5% 1/8W	
R48	5010040	1 kohm ±5% 1/8W		R131	5010077	470 kohms ±5% 1/8W	

C1	4010060	22 nF -20 +80% 40V		C33	4003128	100 pF ±5% 63V	
C2	4201057	1 µF 35V		C34	4130050	6.8 nF ±10% 250V	
C3	4000106	8.2 pF ±0.25 pF 250V		C35	4201635	2.2 µF 63V	
C4	4010027	1 nF ±10% 100V		C37	4200322	4.7 µF 63V	
C5	4000104	4.7 pF ±0.25 pF 63V		C38	4136164	220 nF ±20% 100V	
C6	4010024	470 pF ±10% 100V		C39	4200101	10 µF ±20% 16V	
C7	4000099	3.3 pF ±0.25 pF 63V		C40	4200092	47 µF 16V	
C8	4011022	4.7 nF -20 +80% 40V		C41	4200099	100 µF 16V	
C9	4010024	470 pF ±10% 100V		C50	4003128	100 pF ±5% 63V	
C10	4000105	5.6 pF ±0.25 pF 63V		C51	4000094	150 pF ±5% 63V	
C11	4000029	220 pF ±5% 63V		C52	4101020	1.5 nF ±5% 63V	
C12	4011022	4.7 nF -20 +80% 40V		C53	4101020	1.5 nF ±5% 63V	
C13	4000107	68 pF ±2% 63V		C54	4010060	22 nF -20 +80% 40V	
C14	4003124	56 pF ±2% 63V		C55	4100029	2.2 nF ±5% 63V	
C15	4010060	22 nF -20 +80% 40V		C56	4136156	100 nF ±20% 100V	
C17	4010041	10 nF -20 +80% 40V		C57	4130156	100 nF ±20% 100V	
C18	4010060	22nF -20 +80% 40V		C60	4000016	10 pF ±2% 63V	
C19	4000021	6.8 pF ±0.25 pF 63V		C61	4340063	60 pF Foil	
C20	4000059	82 pF ±2% 63V		C62	4011025	3.3 nF ±10% 100V	
C21	4000059	82 pF ±2% 63V		C63	4340062	20 pF Foil	
C22	4000021	6.8 pF ±0.25 pF 63V		C64	4130150	100 nF ±20% 100V	
C23	4130078	47 nF ±20% 250V		C65	4130150	100 nF ±20% 100V	
C24	4010060	22 nF -20 +80% 40V		C66	4100123	150 pF ±2.5% 63V	
C25	4201061	4.7 µF 63V		C67	4340003	60 pF Foil	
C26	4201061	4.7 µF 63V		C68	4000077	47 pF ±2% 63V	
C27	4130104	220 nF ±20% 100V		C69	4310014	2 x 335 pF	
C28	4130114	470 nF ±10% 100V		C70	4100128	330 pF ±2.5% 63V	
C29	4130104	220 nF ±220% 100V		C71	4340002	20 pF Foil	
C30	4101067	220 pF ±5% 63V		C72	4000016	10 pF ±2% 63V	
C31	4200342	10 µF -10 +50% 63V		C74	4201035	2.2 µF 63V	
C32	4201035	2.2 µF 63V					

C76	4200016	22 µF 25V	C104	4100081	2.15 nF ±2.5% 63V
C77	4200016	22 µF 25V	C110	4201035	2.2 µF 63V
C78	4201035	2.2 µF 63V	C111	4130100	68 nF ±10% 250V
C79	4010062	330 pF ±10% 100V	C112	4000029	220 pF ±5% 63V
C80	4200342	10 µF -10 +50% 63V	C113	4000107	68 pF ±2% 63V
C81	4010027	1 nF ±10% 100V	C114	4010041	10 nF -20 +80% 40V
C82	4201074	47 µF 40V	C115	4010065	2.7 nF ±10% 63V
C100	4101026	4.7 nF ±5% 63V	C116	4201035	2.2 µF 63V
C101	4201035	2.2 µF 63V	C120	4130104	220 nF ±20% 100V
C102	4101019	1 nF ±5% 63V	C121	4010027	1 nF ±10% 100V
C103	4100081	2.15 nF ±2.5% 63V	C122	4201035	2.2 µF 63V

L1	8020322	Osc.	L9	8020314	IF 468 kHz
L2	8020321	RF	L10	8020315	IF 468 kHz
L3	8020320	RF	L11	8020313	LW RF
L4	6850127	1.2 µH	L12	8020312	MW RF
L5	8020319	RF	L13	8020317	LW osc.
L6	8020323	IF 10.7 MHz	L14	8020316	MW osc.
L7	8020337	IF 10.7 MHz	L100	8022100	Filter
L8	8020337	IF 10.7 MHz			

T1	8010142	300/75 ohms	FE1	6710001	Ferrit tube

BP1	8030012	10.7 MHz	X1	8030006	468 kHz
BP2	8030012	10.7 MHz	X2	8030006	468 kHz

P7	7220116	Plug 8/7 pins

7400202	[redacted]	Switch section
	3304017	Screening single
	3304014	Screening double
	3304098	Screening double with partition

Tuning, 5310088, PC12

R2	5370003	1 kohm	R5	5011024	680 ohms ±5% 1/4W
R4	5011024	680 ohms ±5% 1/4W			

Sound Control, 5310089, PC14

P8	7220126	Plug (6 pins)

R1	5011024	680 ohms ±5% 1/4W	R3	5011024	680 ohms ±5% 1/4W
R2	5011024	680 ohms ±5% 1/4W	R4	5011024	680 ohms ±5% 1/4W

P4	7220126	Plug (6 pins)

Tone Control, 8002374, PC13

R1	5010065	100 ohms ±5% 1/8W	R107	5010041	5.6 kohms ±5% 1/8W
R2	5010077	470 kohms ±5% 1/8W	R108	5010063	150 kohms ±5% 1/8W
R100	5010064	2.2 kohms ±5% 1/8W	R109	5010076	3.3 kohms ±5% 1/8W
R101	5010431	2.7 Mohms ±10% 1/8W	R110	5010066	1.8 kohms ±5% 1/8W
R102	5010054	1 Mohm ±5% 1/8W	R111	5010041	5.6 kohms ±5% 1/8W
R103	5010059	10 kohms ±5% 1/8W	R112	5010075	33 kohms ±5% 1/8W
R104	5010298	2.7 kohms ±5% 1/8W	R113	5010129	220 kohms ±5% 1/8W
R105	5010041	5.6 kohms ±5% 1/8W	R114	5010064	2.2 kohms ±5% 1/8W
R106	5010066	1.8 kohms ±5% 1/8W	R115	5010054	1 Mohm ±5% 1/8W

C1	4201074	47 µF 40V	C106	4130100	68 nF ±10% 250V
C2	4200298	1 µF 63V	C107	4130100	68 nF ±10% 250V
C101	4201061	4.7 µF 63V	C108	4130109	10 nF ±10% 250V
C102	4000069	100 pF ±5% 63V	C109	4200296	2.2 µF 63V
C103	4200296	2.2 µF 63V	C110	4010008	1nF -20 +50% 400V
C104	4130109	10 nF ±10% 250V	C111	4010008	1nF -20 +50% 400V
C105	4010024	470 pF ±10% 100V			

P3	7220203	Plug 10/9 pins
P4	7210133	Plug 6/6 pins
	7210144	Plug 10/10 pins

Output Ampl., 8002378, PC21

R1	5010141	27 kohms ±5% 1/8W	R108	5010247	1.5 kohms ±5% 1/8W
R100	5010069	39 kohms ±5% 1/8W	R110	5010153	1.2 kohms ±5% 1/8W
R101	5010069	39 kohms ±5% 1/8W	R111	5010067	560 ohms ±5% 1/8W
R102	5610040	1 kohm ±5% 1/8W	R112	5370050	1 kohm ±20% 0.1W
R103	5010061	56 kohms ±5% 1/8W	R113	5010000	270 ohms ±5% 1/8W
R104	5010064	2.2 kohms ±5% 1/8W	R114	5010403	27 ohms ±5% 1/8W
R105	5010041	5.6 kohms ±5% 1/8W	R121	5102007	0.39 ohms ±10% 1W
R106	5010048	4.7 kohms ±5% 1/8W	R122	5102007	0.39 ohms ±10% 1W
R107	5010057	150 ohms ±5% 1/8W	R123	5001001	10 ohms ±10% 1/4W

C1	4201066	22 µF 63V	C105	4003135	39 pF ±5% 63V
C100	4201066	22 µF 63V	C106	4010066	22 nF -20 +80% 40V
C101	4200380	1 µF 63V	C108	4200407	5000 µF 50V
C102	4010027	1 nF ±10% 100V	C109	4130104	0.22 µF ±20% 100V
C103	4200299	220 µF 40V	C110	4130104	0.22 µF ±20% 100V
C104	4201060	100 µF 40V			

L100	6850114	0.5 µH

P1	7220206	Plug 5/4 pins
P2	7220160	Plug 5/4 pins

Power Supply, 8002387, PC22

R1	5010048	4.7 kohms ±5% 1/8W	R4	5010059	10 kohms ±5% 1/8W
R2	5010076	3.3 kohms ±5% 1/8W	R5	5010048	4.7 kohms ±5% 1/8W
R3	5010059	10 kohms ±5% 1/8W			

C1	4130106	330 nF ±20% 100V	C6	4010027	1 nF ±10% 100V
C2	4130106	330 nF ±20% 100V	C7	4130104	220 nF ±20% 100V
C3	4200408	5000 µF 70V	C8	4130104	220 nF ±20% 100V
C4	4010027	1 nF ±10% 100V	C9	4200406	2200 µF 40V
C5	4201065	10 µF 63V	C10	4130104	220 nF ±20% 100V

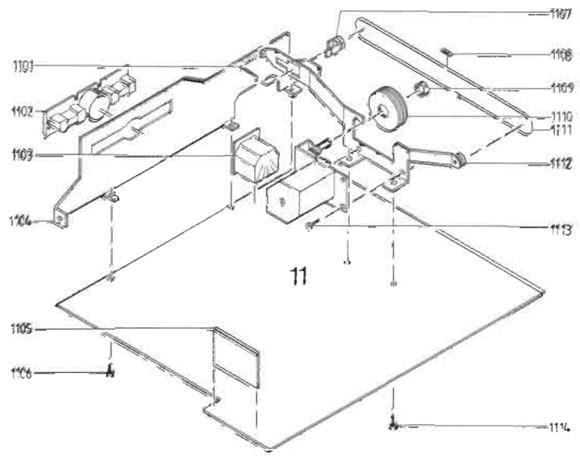
F1	6604023	F-1A/250V IEC 127 (Quick)
	7500002	Holder for fuse

P5	7220115	Plug 7/6 pins
P6	7220207	Plug 7/6 pins

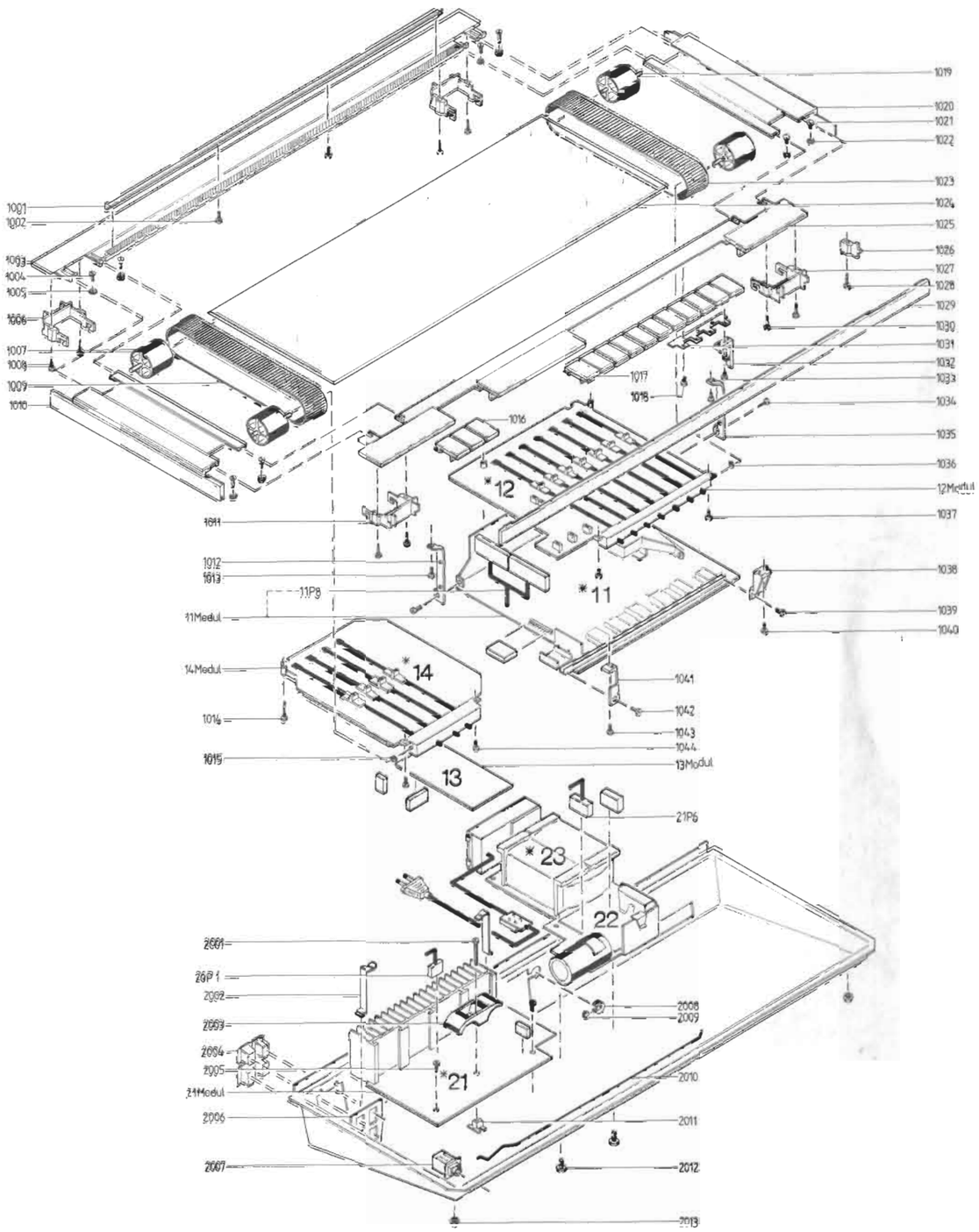
LIST OF MECHANICAL PARTS

1001	3152283	Holder
1002	2039006	Screw M3 x 5
1003	2568605	Rear profile
1004	2038949	Screw AM3 x 12
1005	2380011	Nut M3
1006	3152275	Holder
1007	2794076	Roller
1008	2013215	Screw 2,9 x 16 black
1009	3946021	Belt
1010	3413211	Side piece, teak
	3413213	Side piece, rosewood
	3413214	Side piece, oak
1011	3152275	Holder
1012	2548163	Bracket
1013	2013212	Screw 2,9 x 6,5 black
1014	2013215	Screw 2,9 x 16 black
1015	2390006	Circlip
1016	2775762	Knob
1017	2775762	Knob
1018	2039006	Screw
1019	2794076	Roller
1020	3413221	Side piece, teak
	3413223	Side piece, rosewood
	3413224	Side piece, oak
1021	2038949	Screw AM3 x 12
1022	2380011	Nut M3
1023	3946021	Belt
1024	3191122	Dial
1025	2568606	Front profile with knobs
1026	3152276	Holder
1027	3152275	Holder
1028	2013215	Screw 2,9 x 16 black
1029	2568607	Front profile
1030	2013215	Screw 2,9 x 16 black
1031	2816166	Bronze spring
1032	2854075	Arm
1033	2039009	Screw M3 x 5
1034	2013212	Screw 2,9 x 6,5 black
1035	2548163	Bracket
1036	2390006	Circlip UG4 x 0.8
1037	2039006	Screw M3 x 5
1038	2550058	Holder
1039	2039006	Screw M3 x 5
1040	2013065	Screw 2,9 x 9,5 black
1041	2548169	Bracket
1042	2039006	Screw M3 x 5
1043	2039006	Screw M3 x 5
1044	2039006	Screw M3 x 5
11Modul	8002376	PC, FM-AM
11P8	6275413	Sockets with wires
12Modul	5310088	Tuning unit
13Modul	8002374	PC, tone regulation
14Modul	5310089	Tone control
2001	2013088	Screw 2,9 x 32
2002	2816167	Spring
2003	2510127	Clamp
2004	7211047	Socket
2005	2013076	Screw 2,9 x 5 black
2006	3122095	Mounting plate
2007	7210212	Jack socket
2008	2641061	Bushing
2009	2641062	Lock
2010	2850094	Arm
2011	2576109	Spacer
2012	2043005	Screw AM4 x 6 black
2013	3035026	Rubber foot
20P1	6273843	Wire bundle with socket
21Modul	8002378	PC, output amplifier
21P6	6275420	Wire bundle with socket

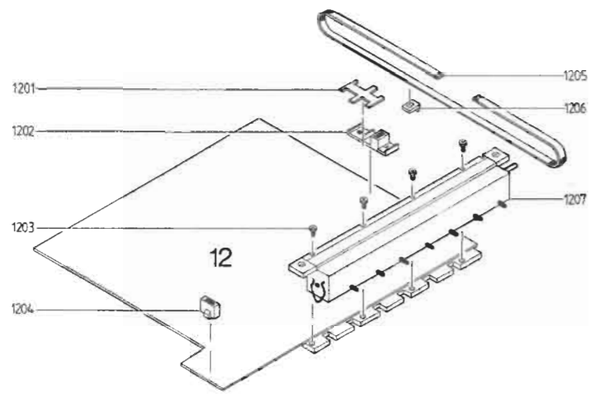
PC, AM-FM 8002376



1101	2810098	Spring
1102	7220028	Sockets
1103	7210033	Socket 5pol.
	2611304	Screw 2,2 x 6,5 black
1104	2548161	Bracket
1105	6140772	Screen
1106	2013091	Screw 2,9 x 6,5 black
1107	2542514	Bracket
1108	3034042	Locking plate
1109	2396018	Spire SCB 3730
1110	2724058	Cord pulley
1111	3955001	Dial cord
1112	2548174	Bracket
1113	2013076	Screw 2,9 x 4,5 black
1114	2013091	Screw 2,9 x 6,5 black

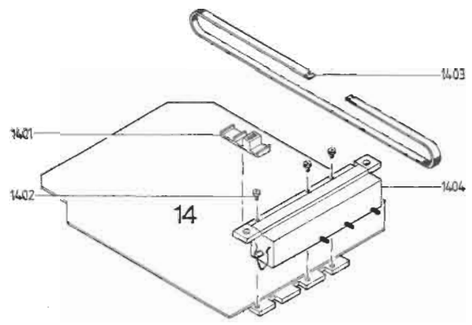


Pre-set Unit 5310088



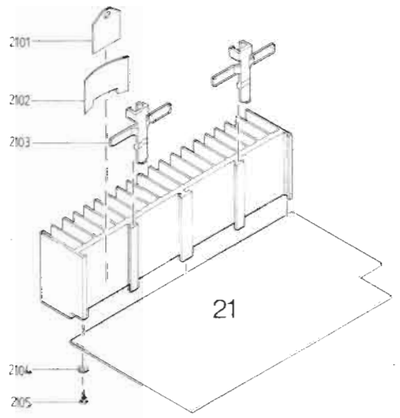
1201	3031061	Connecting piece	1205	2734025	Band
1202	8330024	Housing complet	1206	3034041	Lock
1203	2039008	Screw AM3 x 6	1207	2750022	Clutch system
1204	3370132	Housing			

Tone Control 5310089



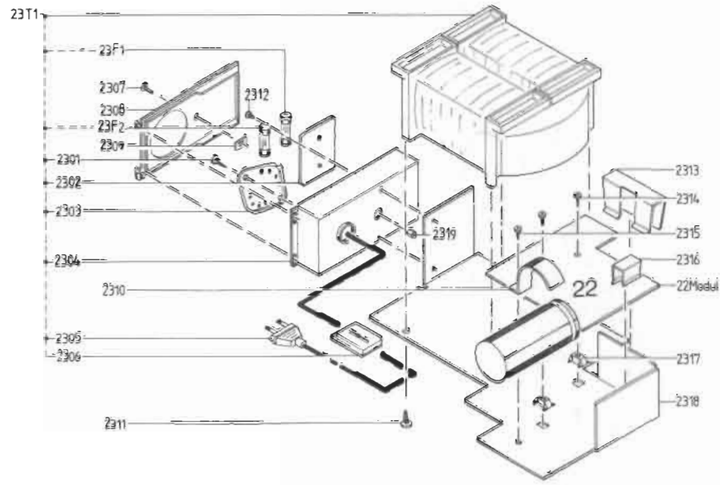
1401	8330024	Housing complet	1403	2734025	Band
1402	2039008	Screw AM3 x 6	1404	2750023	Clutch system

PC, Output Amplifier 8002378



2101	3170169	Mica sheet	2104	2622052	Fibre washer
2102	2816120	Bronze spring	2105	2013079	Screw 2,9 x 9,5
2103	3152257	Holder			

Power Supply Module

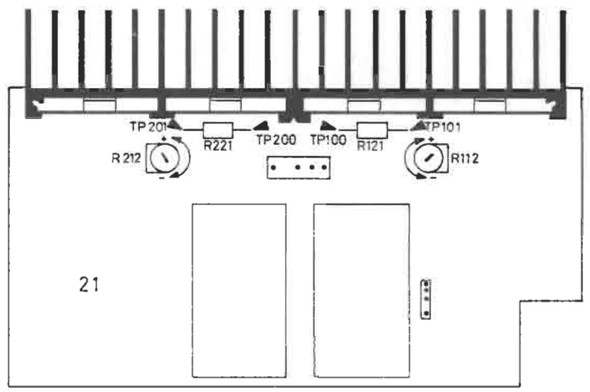


22Modul	8002387	PC, Power supply unit	2312	2013079	Screw 2,9 x 9,5 black
2301	2013207	Screw 2,9 x 9,5 black	2313	2816170	Bronze spring
2302	3120251	Mounting plate	2314	2013906	Screw 2,9 x 6,5 black
2303	7400119	Mains-voltage switch	2315	2013906	Screw 2,9 x 6,5 black
2304	3131016	Housing	2316	2816169	Bronze spring
2305	6271102	Mains lead	2317	2576109	Spacer
2306	7450043	Mains switch	2318	2548164	Chassis
2307	2039113	Screw AM3 x 12	2319	2934065	Nut M3
2308	3164374	Cover	23T1	8013239	Mains transformer
2309	2390020	Locking plate	23F1	6600022	Fuse 1,6A-T
2310	2510132	Clamp	23F2	6600022	Fuse 1,6A-T
2311	2015075	Screw 3,5 x 9,5 black			

Parts Not shown

19Modul	6275412	Main wire bundle
	3532141	Diagram
	3152195	Holder for aerial
	3391541	Outer carton
	3397332	Foam packing
	3397333	Foam packing

ADJUSTMENTS



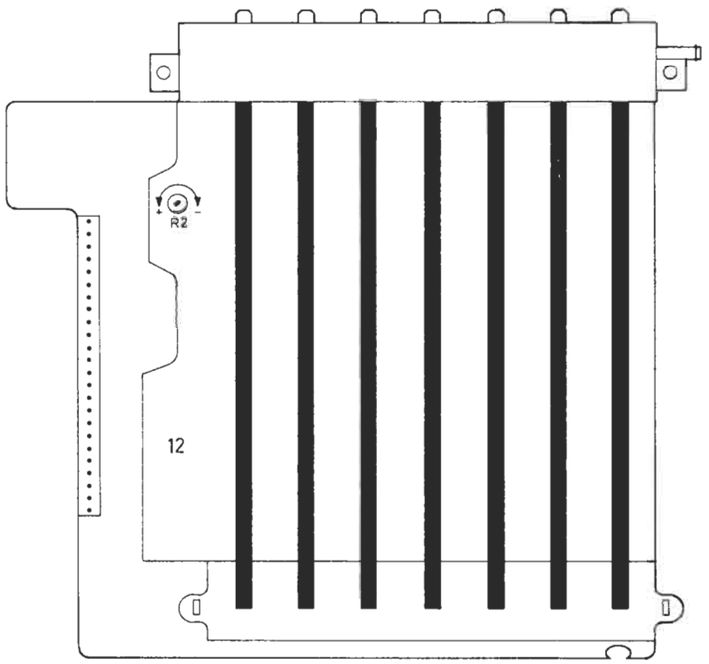
No-Load Current

The no-load current should be adjusted while the receiver is cold and with the volume control at its bottom position.
THE LOUDSPEAKERS MUST NOT BE CONNECTED.
Adjust to 12 mV DC with 21R112 (21R212) measured across 21R121 (21R221), TP100/101 (TP200/201) or to 30 mA measured in the collector of 21IC101 (21IC201).

FM presetting of potentiometers

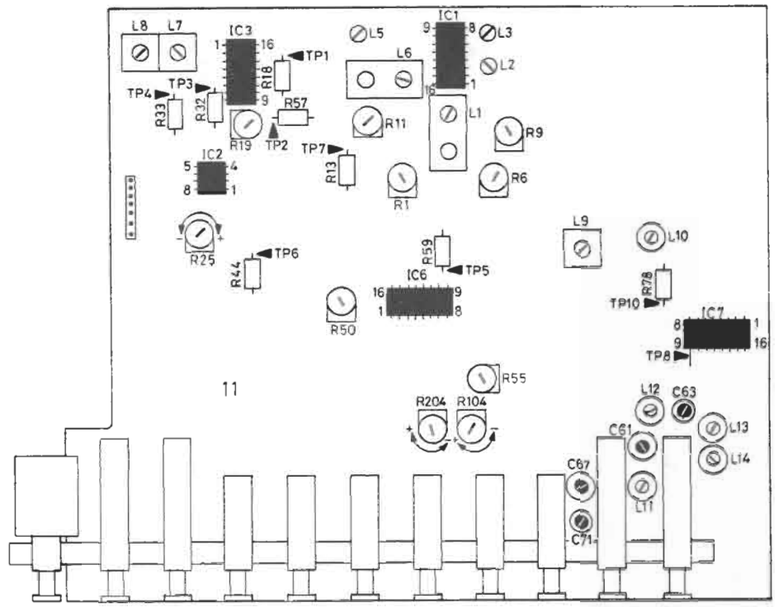
For complete re-adjustment of the FM-section it is often advisable to preset the potentiometers as follows:
11R1, 11R6, 11R9 and 11R11 to be centralized.
11R104, 11R204, 11R55 and 11R25 to be turned all the way clockwise.

Tuning voltage



FM (P1--P5) to be activated.
DC voltmeter to be connected to 11TP6.
Adjust to 19.6 V with 11R25.
The tuning potentiometer for the selected program to be turned to its bottom position.
DC voltmeter to be connected to 11TP7.
Adjust to 3.3 V with 12R2.

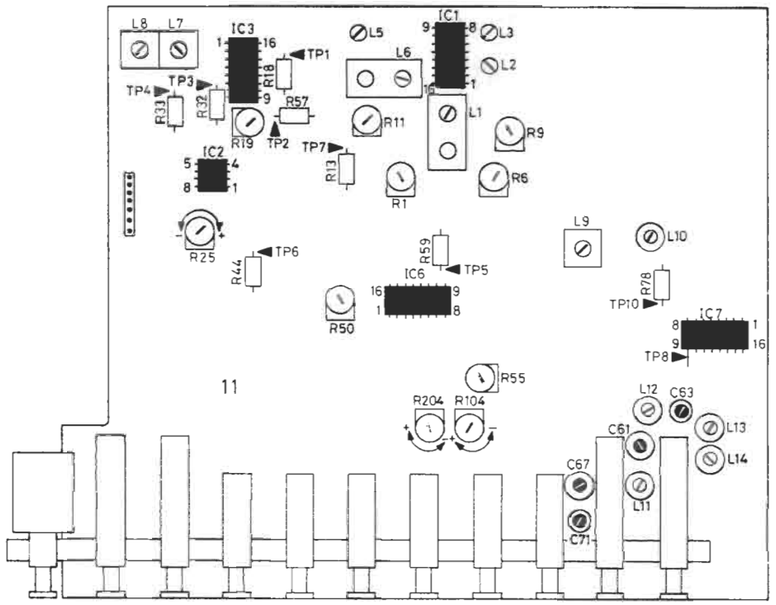
Tuner, Front-end



FM (P1/P5) to be activated and the tuning-potentiometer to be turned to its bottom position.
Sweep generator to be connected to aerial input and adjusted to 87.5 MHz
Oscilloscope to be connected via an RC probe to 11TP2 or via a diode probe to 11TP1.
Adjust to max. and symmetrical IF curve with 11L1, 11L2, 11L3, 11L5 and 11L6.
The tuning-potentiometer to be turned to its top position (108 MHz) and the sweep generator to be adjusted to 108 MHz.
Adjust to max. and symmetrical IF curve with 11R1, 11R6, 11R9 and 11R11.

Detector

The receiver to be adjusted, for instance to 94 MHz and to be connected to a signal generator(or a stereo coder, if available) which is to be adjusted to the same frequency.
The AFC to be cut out.
Oscilloscope to be connected in 11TP2.
With an aerial input of approx. 1 mV the scale should be set at min. AC voltage on an oscilloscope.
Wattmeter or AC voltmeter to be connected to AF output.
11L7 and 11L8 to be adjusted to max. AF output.
DC voltmeter to be connected between 11TP3 and 11TP4.
Adjust to 0 V with 11L7.



Stereo Decoder

Tune is a mono station.
11R19 is turned fully counter clockwise
Connect frequencycounter to 11TP5.
Adjust 11R50 for 19 kHz ±50 Hz.
(11R50 may also be adjusted by applying 19 kHz from 11TP5 to the Y-input of an oscilloscope and 19 kHz from a stereo coder to the oscilloscope's X-input. When the Lissajous figure is stationary, adjustment is correct.
A third adjustment procedure cosists in tuning in a stereo signal on the receiver. Turn 11R50 to one side until the stereo effect ceases and thereafter to the other side until the stereo efect ceases. The intermidiate setting between these two settings is approximately the correct adjustment).
Connect stereo coder to aerial input. AFC ON.
Connect wattmeter or AC voltmeter to AF output. With 11R55 adjust for min. signal in unmodulated channel.
Adjust input signal to 30 microvolts.
Adjust 11R19 for 25 dB channel separation.

FM Level Adjustment

11R204 (left) and 11R104 (right) are factory pre-adjusted for max. output, but the AF signal from the FM section can be attenuated with these adjustments should this be found necessary.

AM-IF

Set the receiver to e.g. 575 kHz in the MW band.
Apply signal from the sweep generator to 11TP8 through 0.1 µF, centre frequency 469.5 kHz Δ 10 kHz (the 468 kHz resonators in the circuit used provide a centre frequency of approx. 469.5 kHz ±1.5 kHz).
Necessary RF voltage is approx. 10 millivolts (due to IF suppression in the IC). However, it is recommend to stop the oscillator by connecting a 0.1 µF capacitor between pin 15 of 11IC7 and chassis potential as this will result in a considerable reduction in IF suppression. Necessary RF level will then be 10-100 µV. It is recommended to use as weak a signal as possible to avoid influence from the AGC.
Connect oscilloscope to 11TP10 (pin 6 of 11IC7). Adjust 11L9 and 11L10 for maximum and symmetrical IF curve.
Remove oscillator stop.

MW Oscillator and Signal Frequency Circuits

During oscillator and signal-frequency adjustment, it is necessary to place PC11 into its normal position and set the dial to the adjustment frequency. After that the PC board can be placed into service position and adjustment be made.
Connect signal generator to aerial through dummy aerial 575 kHz, modulation 30% - 400 Hz or 1 kHz.
Connect wattmeter or AC voltmeter to AF output. Set receiver to 575 kHz.
With 11L14 adjust the oscillator so that the receiver is tuned exactly to the transmitter frequency. (Use weakest possible signals throughout the adjustment procedure as this will result in the most precise adjustment).
With 11L12 adjust for max. signal at AF output.
Set signal generator and receiver to 1495 kHz.
With 11C71 set oscillator to frequency.
With 11C63 adjust signal-frequency circuit for max. signal.
Repeat adjustments until dial calibration matches correctly and signal-frequency circuits is at max.
Lastly adjust 11C63.

LW Oscillator and Signal Frequency Circuits

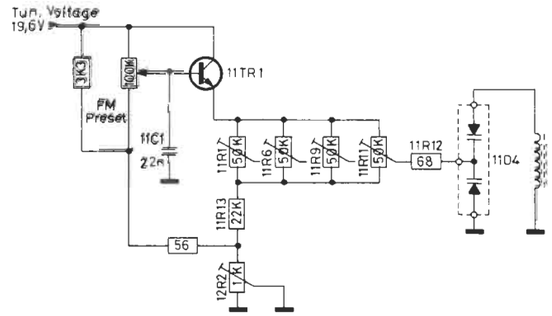
Set signal generator and receiver to 155 kHz.
With 11L13 set oscillator to frequency.
With 11L11 adjust signal-frequency circuit for max. signal.
Set signal generator and receiver to 285 kHz.
With 11C67 set oscillator to frequency.
With 11C61 adjust signal-frequency circuit for max. signal.
Repeat adjustment until dial calibration matches correctly and signal-frequency circuits is at max.
Lastly adjust 11C61.

FUNCTIONAL DESCRIPTION

As the majority of the circuits used in this receiver are well-known types, only new circuits will be explained below.

FM tuner, Front-end

For the FM tuner an IC of the type TDA 1062 has been used.
however, the trimming circuit has been designed differently inasmuch as double capacitor-diodes have been used and the conventional trimming capacitors have been replaced by trimming potentiometers.
The double capacitor-diodes are more linear than single diodes, because, as far as the signal is concerned, they are in series and reversed. Thus the curved characteristics will neutralize each other. This feature, together with the TDA 1062, will result in better cross modulation data and consequently better signal processing performance.



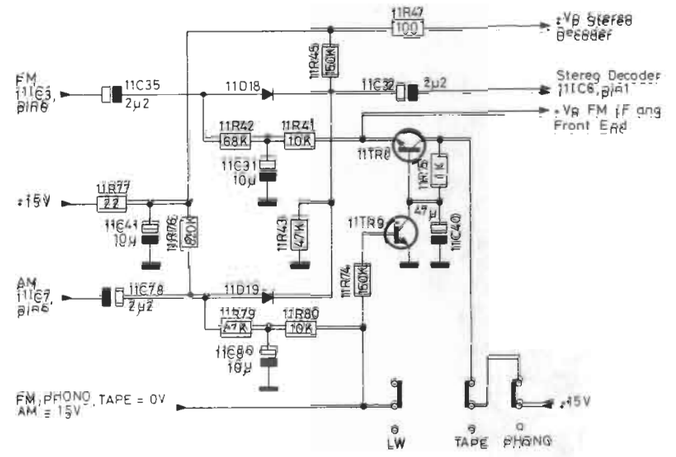
The transistor 11TR1 is an emitter follower ensuring low impedance of the tuning voltage relative to the capacitor-diodes, and at the same time it is part of the temperature comensation. The temperature curve of the transistor corresponds namely to that of the diodes, and as both are governed by natural constants a temperature compensation is achieved which aproaches the ideal situation.

Diode switch

The signal path, FM or AM, is selected by means of a diode switch 11D18 (FM) and 11D19 (AM). The diode switch is controlled via the push-button unit by a +15 V supply voltage.
The voltage of the centre pin of the LW switch at »Program Indication« will be 0 V or 15 V, dependant on program selection:

FM – PHONO – TAPE	= 0 V
AM	= 15 V

These levels open and close the relevant diodes and apply the supply voltage to the FM tuner and the IF in the FM position.



FM

The control voltage is 0 V.

The 11D19 anode is kept at 0 V (+0.8 V) through 11R79 and 11R80. (To avoid that 11C78 gets reversed polarity, 11R76 ensures that the voltage at the anode of 11D19 will not drop below +0.8 V as a residual voltage of +0,8 V DC is present at pin 6 of the AM IC).
Furthermore 11TR9 is kept OFF whereby 11TR8 will apply 15 V to the FM tuner and the IF.
Moreover, the 15 V will bias 11D18 in the forward direction across 11R41, 11R42 and 11R43.
Across 11R43 approx. 7 V will be aplied whereby 11D19 with 0.8 V on the anode will be biased in the reverse direction.

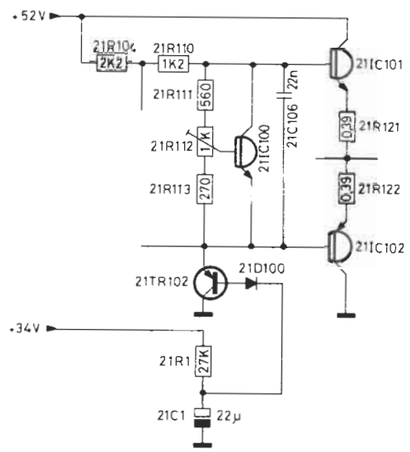
AM

The control voltage is 15 V.
11D19 is biased in the forward direction through 11R43, 11R79 and 11R80.
Across 11R43 approx. 7 V will be aplied.
Through 11R41 and 11R42 the anode of 11D18 is kept at 0 V. 11D18, with 7 V aplied to the cathode, is thus cut-off.

PHONO – TAPE

The control voltage is 0 V.
11D19's anode is kept at 0 V.
11TR8 cannot, as by FM, apply 15 V to the FM section because this connection has been cut-off by the PHONO-TAPE switch. Consequently 11D18's anode is also 0 V.
Via 11R77 and 11R45 15 V is aplied to the cathodes of 11D18 and 11D19. In the voltage divider 11R77, 11R45 and 11R43 approx. 4 V will be applied across 11R43 whereby 11D18 and 11 D19 will be cut-off.

AF start-up



To avoid exceeding of the maximum current limit of the output transistors and to avoid starting blob, a start-up circuit 21TR102 (202) has been introduced and it ensures a smooth start-up of the output stage.

At the starting moment the voltage across 21C1 is 0 V. 21TR102 will cause a current to flow through 21R104, 110 and 21IC100. The base of 21IC102 goes towards 0 with the result that a very weak current flows through the output transistors. 21C1 starts charing through 21R1 whereby 21TR102 is cut-off. The voltage on the base of 21IC101 will increase thus causing a current to flow through the output transistors.

TECHNICAL SPECIFICATIONS
Amplifier

Power output RMS DIN	2 x 30 watts/4 ohms
	2 x 20 watts/8 ohms
Power output 20-20,000 Hz	2 x 20 watts/4 ohms
	2 x 18 watts/8 ohms
Harmonic distortion -26 dB	< 0.1%
Harmonic distortion nominal output	< 0.4%
Intermodulation	< 0.65%
Frequency range ±1.5 dB	20-30,000 Hz
Power bandwidth	15-50,000 Hz
Damping factor	> 24
Input pickup	2 mV/47 kohms
Overload margin pickup	80 mV
Input tape	200 mV/470 kohms
Overload tape	8 V
Signal-to-noise ratio pickup	> 81 dB
Signal-to-noise ratio tape	> 81 dB
Channel separation 1000 Hz	> 54 dB
250-10,000 Hz	> 37 dB
Output tape	30 mV/100 kohms
Output headphones	Max. 11 V/200 ohms
Bass control at 40 Hz	± 12 dB
Treble control at 12,500 Hz	± 12 dB

FM

FM range	87.5-108 MHz
FM aerial impedance	75/240 ohms
FM sensitivity stereo 46 dB	< 25 µV/75 ohms
Frequency range ± 1.5 dB	20-15,000 Hz
Harmonic distortion	< 0.25%
Stereo channel separation	> 40 dB
Pilot suppression 19 kHz	> 55 dB
Suppression 38 kHz	> 45 dB

AM

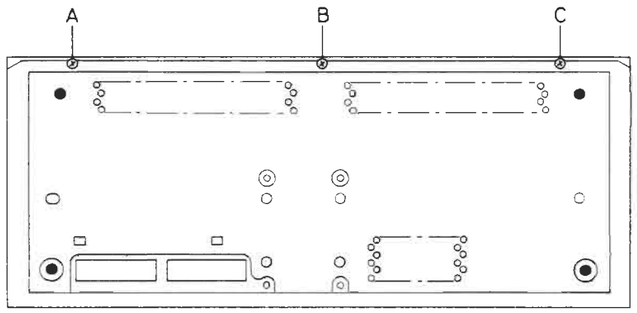
AM range LW	147-320 kHz
AM range MW	520-1610 kHz
Sensitivity LW 20 dB	< 100 µV
Sensitivity MW 20 dB	< 80 µV

Other data

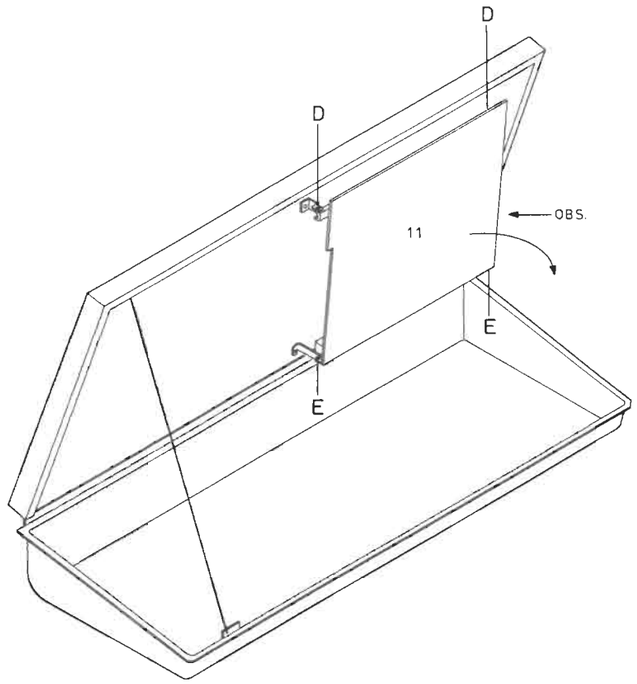
Power supply	110-130-220-240 V
Frequency	50-60 Hz
Power consumption	10-150 watts
Dimensions WxHxD	60 x 10 x 24 cm
Weight	7.2 kg.

Subject to change without notice

DISMANTLING



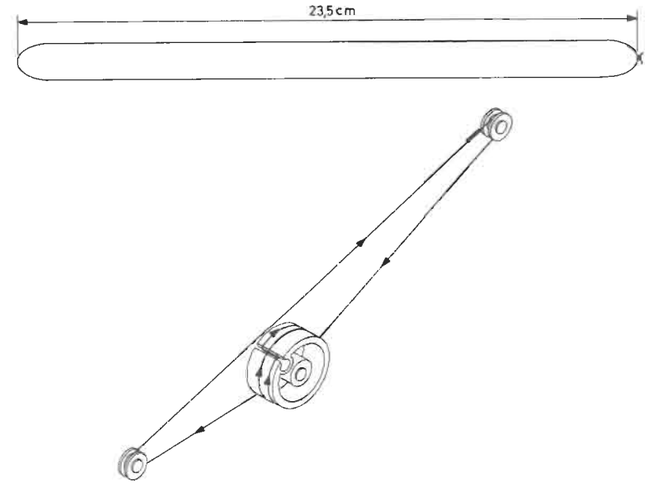
Remove screws A, B and C.



The top part can now be lifted into servicing position onto the support fitted at the front edge.
Loosen screws D and E, and snap the dial cord off the indicator band (O.B.S.).
PC 11 can now be swung out into servicing position.

SERVICING TIPS

Dial drive



Turn the dial cord wheel clockwise. Dial cord (index No. 3955016) is cut-off at a length of aprox. 55 cms (21½"). Knot the cord ends to give a lop of 23.5 cms (9¼"). The cord is mounted as shown in the drawing.